A Guide to Commercial Food Composting

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OVERVIEW

This guide is designed as a basic decision-makers tool for the food service industry. Over the past three years, recovery of organics through composting has become an important part of a comprehensive waste management system for food service businesses. Composting can recycle nearly all organic residuals from food service and food production businesses, including fruit and vegetable trim and leftover food, waxed corrugated boxes, napkins, and other soiled paper. The amount and kinds of organics a business generates determines how appropriate it is to compost. Businesses that may benefit from composting include:

- Supermarkets, produce markets, and retail food preparers (precut vegetables, salads, etc.).
- Restaurants (especially those with high volume or that prepare food on-premises), hotels and catering businesses.
- Institutions, such as universities, schools, prisons, and hospitals.

While food-processing residuals are ideal for composting, this guide does not include a section on composting in that industry. The guide speaks primarily to those in the retail food service business.

OBJECTIVE

The objective of this guide is to provide a food service business with the tools to evaluate the benefits of composting. These include:

- Basic principles of composting.
- Identifying and targeting compostables in your waste stream.
- Determining where to compost.
- Evaluating costs.
- Getting started.
- Identifying potential barriers.

THE BENEFITS OF COMPOSTING

ECONOMIC

The potential to save money through composting occurs when the fee charged by the composting site is significantly less than the fee for disposal. Because local circumstances vary, landfill disposal may cost less, more, or be competitive with composting. These fees show strong regional or even local differences.

ENVIRONMENTAL

Composting is considered recycling by the U.S. EPA and by at least 14 states, and so can help to meet voluntary or mandatory recycling/diversion goals. Some states and localities are considering mandatory source-separation of food residuals.

There are also environmental benefits. Many institutions use the finished compost on their grounds. A few grocery chains sell the finished compost back to their customers, completing the

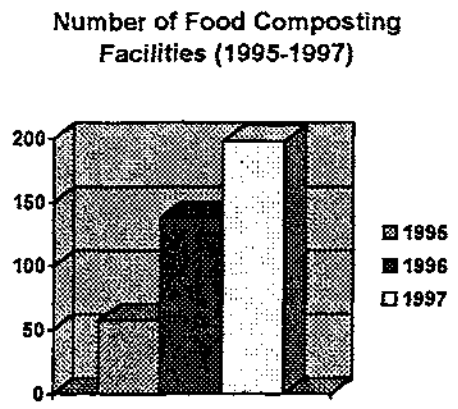
recycling loop. Separating organics for composting also encourages more traditional recycling and is effective in identifying areas in a business to target for source reduction.

COMMUNITY RELATIONS

Public understanding of composting begins in the backyard, where millions compost leaves and grass and use the finished product on their gardens. A business that recovers organics through composting shows the same kind of commitment to improve the land and the community. Some businesses donate finished compost to public or private grounds.

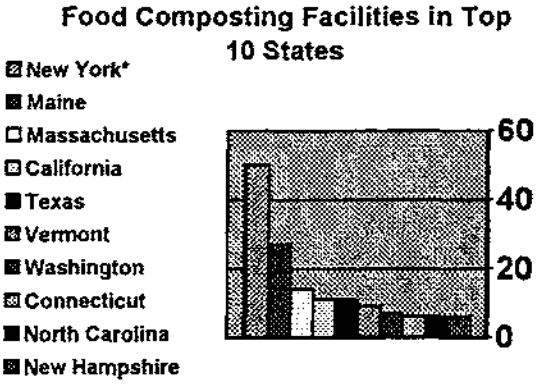
INTRODUCTION

WHAT IS HAPPENING TO U.S. FOOD RESIDUALS?



In 1995, the first year that food composting in the U.S. was surveyed, there were 58 sites in 24 states composting food and some soiled paper. In 1996, there were 138 sites in 30 states, and in 1997 the number of sites rose to 198 in 36 states (176 operating and 22 in demonstration).[1]

The U.S. EPA reports in its characterization of municipal solid waste for the year 1995 that 600,000 tons of food scraps were recovered, out of 14 million tons generated as waste.[2] Data released in 1997 by the U.S. Department of Agriculture finds that 27% of the 178 million tons of food produced and available for human consumption in the U.S. annually is thrown out as solid waste.



*30 are correctional facilities

Keeping food residuals and soiled and other unrecyclable paper out of the landfills and recovering them through composting is a priority for the U.S. EPA and for most states. Nitrogen-rich food in landfills produces methane, and is too wet to be a good source of fuel for incinerators. The only way to truly recover organics and turn them into a new product is through composting. Finished compost, a rich humus, is then returned to the land as a soil conditioner.

For information on food donations and food scraps for animal feed, see the U.S. EPA fact sheets in the "Resources" section.

WHAT IS COMPOSTING?

Composting is the controlled biological degradation of organic matter. The result is compost, a soil conditioner useful in agriculture, horticulture, landscaping, and land reclamation. For centuries composting has been used to turn leaves and grass into humus. Over the last five years, composting has expanded to include recovery of supermarket, restaurant, and other food service organics.

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[1] Conni Kunzler and Rebecca Roe, "Food Service Composting Projects on the Rise," *BioCycle*, April, 1995; Conni Kunzler and Molly Farrell, "Food Service Composting Update," *BioCycle*, May 1996; Nora Goldstein, "Nationwide Inventory of Food Residuals Composting, Part II," *BioCycle*, August, 1997.

[2] Franklin Associates, Ltd., for the United State Environmental Protection Agency Municipal and Industrial Solid Waste Division Office of Solid Waste, *Characterization of Municipal Solid Waste in The United States: 1996 Update*, May 1997.

THE COMPOSTING PROCESS

Composting facilities of all sizes accept a broad range of organic materials. These are usually mixed into a recipe with a carbon-to-nitrogen ratio between 20:1 and 40:1. Prior to composting, some materials may be shredded or preprocessed to facilitate faster breakdown.

During composting, microbes use oxygen, moisture and carbon to grow and nitrogen to multiply. When these are maintained at optimal levels, the decomposition process is greatly accelerated. As the organics break down, heat is generated which sanitizes the material. The compost is then stabilized to a point where it is beneficial to plant growth and soil restoration. The entire process is usually accomplished in 8 to 24 weeks.

COMPOSTING TECHNOLOGIES

There are three basic composting methods. The most widely practiced is *windrow composting*. In this method, compostables are formed into long piles or rows. Sometimes this process includes forced aeration and periodic turning or agitation of the rows using specialized machinery.

In a *static aerated pile*, compostables are formed into large piles and insulated with a layer of mature compost. Forced aeration can be applied, but no turning or agitation is done.

In an enclosed vessel, called *in-vessel*, compostable material is fed into a drum, silo, or similar structure where the environmental conditions are closely controlled. This process may also include aeration and mechanical agitation. Recently, the use of containerized systems that compost a small amount of material–typically one to five tons per day–has become more common.

Finally, there is vermicomposting, which is the process of using red or other types of worms and microorganisms to convert food scraps and other organic matter into a fine, uniform compost. Red worms, also known as "red wigglers" or "manure worms," thrive on organic materials. Organics added to bins or long trays are digested by the worms, yielding a dark, rich compost composed of worm "castings". While most vermicomposting is done on a small scale, about 10 sites in the U.S. use vermicomposting to process commercial organic residues.